

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-10 and 13-27 are pending in the application, with 1, 2, 13, 14, 22, 23, and 24 being the independent claims. Claims 3, 4, 7, 13-17, 23 and 24 are withdrawn. Support for the amendment to claims 1, 2, and 22 can be found at least, for example, in paragraphs [0083] and [0089] of the specification. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 103

Claims 1, 2, 8-10, 20-22, 25 and 26 are rejected as being obvious under 35 U.S.C. § 103(a) over U.S. Patent No. 5,563,634 to Fujii *et al.* (the "Fuji patent") in view of the Hayes patent, U.S. Patent No. 4,484,199 to Watanabe (the "Watanabe patent") and U.S. Patent No. 6,347,857 to Purcell *et al.* ("the Purcell patent"). Claims 5 and 6 are rejected as being obvious under 35 U.S.C. § 103(a) over the Fuji patent in view of the Hayes patent, the Watanabe patent and the Purcell patent, as applied to claim 2, and further in view of U.S. Patent No. 6,640,621 to Ward *et al.* (the "Ward patent"). Claims 18 and 19 are rejected as being obvious under 35 U.S.C. § 103(a) over the Fuji patent in view of the Hayes patent, the Watanabe patent and the Purcell patent, as applied to claim 1, and further in view of U.S. Patent No. 4,631,554 to Terasawa ("the Terasawa patent").

Claim 27 is rejected as being obvious under 35 U.S.C. § 103(a) over the Fuji patent in view of the Hayes patent, the Watanabe patent and the Purcell patent, as applied to claim 2, and further in view of U.S. Patent No. 6,329,209 to Wagner *et al.* (the "Wagner patent"). Applicants respectfully traverse these rejections.

Each of the independent claims is directed to a dispensing device or a method of detecting a defective discharge of a solution containing a biological sample in a discharge mechanism. Claim 1, as amended herewith, is directed to a dispensing device having "a discrimination means for discriminating the existence of a defective discharged caused by an insufficient amount of biological sample contained in the discharge means by detecting drive current in the discharge means when discharging said solution from said discharge means." Claim 2, as amended herewith, is directed to a dispensing device having "discrimination means for discriminating the existence of a defective discharge of the solution caused by an insufficient amount of the biological sample being supplied to said nozzle hole based on the drive current detected with said drive current detection circuit." Claim 22, as amended herewith, is directed to a method of detecting a defective discharge of a solution containing a biological sample in a discharge mechanism including a step of "discriminating the existence of a defective discharge of the solution caused by an insufficient amount of the biological sample being supplied to said nozzle hole based on the detected drive current." The prior art of record does not disclose or suggest the claimed invention.

The Fujii patent discloses an ink jet head drive apparatus with a first substrate 1 having a plurality of ink ejection chambers 6 each with a diaphragm 5 and a second substrate 2 having a plurality of individual electrodes 21 that are aligned to correspond

with the diaphragms 5 (col. 9, lines 2-15 and 47-67; FIG. 2). A drive circuit 102 is provided for discharging ink from chambers 6, wherein the drive circuit 102 is connected to the electrodes 21 for applying a pulse voltage to create an electrostatic attraction between the electrodes 21 and the diaphragms 5, which cause the diaphragms to deflect towards the electrodes (col. 10, lines 41-63). As noted by the Examiner on page 3 of the office action mailed 11/13/06, the Fujii patent does not disclose or suggest the claimed discrimination means or discriminating step.

The Hayes patent discloses a piezoelectric dispenser having a plurality of jetting heads for discharging a biological solution, but does not disclose or suggest a discrimination means, discriminating step, or drive current detection circuit. The disclosure of the Hayes patent does not provide any suggestion or motivation to modify the Fujii patent to embody the invention of claims 1, 2, or 22.

The Purcell patent is directed to an ink droplet analysis apparatus wherein an ink jet printer deposits a test print pattern on a substrate through a plurality of nozzles. A digital image is taken of the deposited test pattern and analyzed to determine the performance of each nozzle to see if any are defective or not working properly (col. 2, lines 42-62). The apparatus of the Purcell patent determines if there is a defective discharge after the ink has been discharged **through digital imaging**. There is no disclosure or suggestion of a discrimination means that discriminates a defective discharge based on **the driving current** detected in the discharge means. The disclosure of the Purcell patent does not provide any suggestion or motivation to modify the Fujii patent to embody the invention of claim 1, 2, or 22.

The Watanabe patent discloses a method and apparatus for detecting failure of an ink jet printing device. Ink droplets 6 are jetted from nozzles 4 and strike a receiving electrode 7, which obtains a charge when each ink droplet 6 strikes, the charges are in turn converted into an electric detection signal by detecting circuit 8 (col. 2, lines 56-68). The detection signals are transformed into rectangular pulse waveforms, so that the waveforms from a test discharge are compared with the waveforms of a successful discharge to determine if there are any misfires (col. 3, lines 36-42 and col. 3, line 57 to col. 4, line 9).

There is no disclosure or suggestion of discriminating a defective discharge caused by an insufficient amount of the biological sample being supplied to the discharge means as soon as the solution is discharged or of a discrimination means for accomplishing the same. Rather, the apparatus and method of the Watanabe patent determines there is a defective discharge after the ink droplets have passed electrodes 2 in FIG. 1 or electrodes 12 and 20 in FIGS. 12 and 15. The present invention can detect defective discharges promptly based on the drive current detected when an insufficient amount of the biological sample is supplied to the discharge means or nozzle hole without the having to wait for droplets to pass electrodes 2, 12, or 20 as required in the Watanabe patent. The disclosure of the Watanabe patent does not provide any suggestion or motivation to modify the Fujii patent to embody the invention of claim 1, 2, or 22.

Independent claims 1, 2, and 22, and dependent claims 3-10, 18-21, and 25-27 which depend therefrom, are patentable at least for the reasons noted above. Applicants respectfully request that the rejections be withdrawn and the claims allowed.

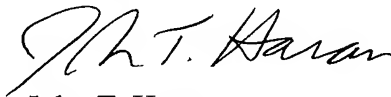
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



John T. Haran
Attorney for Applicants
Registration No. 58,010

Date: February 6, 2007

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600
636348